

Claims

What is claimed is:

- 5 1. A data storage device comprising:
a base plate having a top surface;
a spindle motor positioned on the top surface of the base supporting one or
more data storage discs for rotation on the spindle motor;
an actuator assembly positioned on the top surface of the base plate
10 adjacent the data storage disc; and
a flex printed circuit board assembly on the top surface of the base plate
having actuator and motor electronic control components thereon on the top
surface of the base.
- 15 2. The data storage device of claim 1 further comprising a power combo
chip positioned on the flex printed circuit board assembly positioned on the top
surface of the base.
- 20 3. The data storage device of claim 1 further comprising a top cover
attached to the base to form an enclosed space enclosing the actuator assembly, the
one or more data storage discs and the spindle motor and wherein the actuator and
motor electronic control components on the flex printed circuit board assembly are
outside the enclosed space.
- 25 4. The data storage device of claim 1 further comprising:
an interface connector attached to the flex printed circuit board and to the
base plate.
- 30 5. The data storage device of claim 1 wherein the flex printed circuit
board assembly comprises a flexible printed circuit and
a stiffener attached to a bottom surface of the flexible printed circuit.

6. The data storage device of claim 5 wherein the stiffener is metal and forms a ground plane for the circuitry on the flexible printed circuit.

7. The data storage device of claim 6 further comprising a power plane
5 formed on the stiffener beneath the flexible printed circuit.

8. The data storage device of claim 5 wherein the flexible circuit and the stiffener each have a coextensive portion inserted into the interface connector.

10 9. The data storage device of claim 5 wherein the flexible printed circuit comprises a pigtail lead extending beneath the cover to the actuator assembly to connect the electronics components to the actuator assembly.

10. The data storage device of claim 5 wherein the flexible printed
15 circuit comprises a pigtail lead extending beneath the cover to the spindle motor.

11. The data storage device of claim 10 further comprising another pigtail lead extending beneath the cover to the actuator assembly to connect the electronics components to the actuator assembly.

20

12. A flexible printed circuit assembly for use in a data storage device having an actuator assembly adjacent a spindle motor rotating one or more data storage discs, the assembly comprising:

a flexible printed circuit having a pigtail lead for connection to the actuator
25 assembly of the data storage device and a pigtail lead for connection to the spindle motor of the data storage device;

actuator control and signal processing electronics components mounted on, and electrically connected to, the flexible printed circuit; and

a stiffener plate coextensive with a portion of the flexible printed circuit
30 forming a ground plane for the components on the flexible printed circuit.

13. The flexible printed circuit assembly of claim 12 further comprising:
an interface connector attached to the flexible printed circuit and to the
stiffener.

5 14. The flexible printed circuit assembly of claim 13 further comprising a
power plane formed on the stiffener for providing power to the components on the
flexible printed circuit.

15 15. The flexible printed circuit assembly of claim 14 wherein the power
plane and ground plane are separated by an insulator.

16. A printed circuit assembly comprising:
a flexible printed circuit having one or more electronic circuit components
requiring a ground and a power connection mounted thereon;
15 a stiffener plate coextensive with a portion of the flexible printed circuit
forming a ground plane connected to the one or more components.

17. The assembly according to claim 16 further comprising a power
plane formed from the stiffener plate connected to said one or more components
20 forming the power connection therebetween.

18. The assembly according to claim 17 wherein said one or more
components includes a multi-chip package.

25 19. The assembly according to claim 17 wherein said power plane and
ground plane lie in a common plane of the stiffener plate.

20 20. The assembly according to claim 16 further comprising one or more
discrete circuit components fastened to the flexible printed circuit and to one of the
ground and power planes.
30